植 物 分 类 与 资 源 学 报　2012, **34** (1): 17～21
Plant Diversity and Resources　DOI: 10.3724/SP.J.1143.2012.11109

山东贯众属（鳞毛蕨科）两新种

李建秀[1]，周凤琴[1]，李晓娟[1]，孙稚颖[1]，孔宪需[2]，郭庆梅[1]，石优霞[3]
（1 山东中医药大学，山东 济南　250355；2 中国科学院成都生物研究所，四川 成都　610041；
3 山东大学天然药物研究所，山东 济南　250002）

摘要：描述了山东贯众属两新种—密齿贯众（*Cyrtomium confertiserratum*）和倒鳞贯众（*C. reflexosquamatum*）。植物形态学和孢粉学（光学显微镜与扫描电镜）观察结果显示：密齿贯众与贯众复合群中的原变型（*Cyrtomium fortunei* f. *fortunei*）相近似，区别在于本新种顶生羽片菱形，基部1～2深裂，裂片长3～4 cm，宽约10 mm，侧生羽片边缘有细密锯齿，囊群盖边缘有小齿，孢壁具不规则的瘤状纹饰。倒鳞贯众与山东贯众（*C. shandongense*）形态相近，但倒鳞贯众体型较大，高达60 cm，羽片较多，达15～29对，叶轴基部以上密被倒生鳞片，孢壁为耳片状及网结状纹饰，易于区别。
关键词：密齿贯众；倒鳞贯众；贯众属；新种
中图分类号：Q 949　　**文献标识码**：A　　**文章编号**：2095-0845(2012)01-017-05

Two New Species of *Cyrtomium* (Dryopreridaceae) from Shandong

LI Jian-Xiu[1], ZHOU Feng-Qin[1], LI Xiao-Juan[1], SUN Zhi-Ying[1],
KONG Xian-Xu[2], GUO Qing-Mei[1], SHI You-Xia[3]
(1 *Shandong University of Traditional Chinese Medicine*, Jinan 250355, China; 2 *Chengdu Institute of Biology*, *Chinese Academy of Sciences*, Chengdu 610041, China; 3 *Department of Natural Medicine*, *Shandong University*, Jinan 250002, China)

Abstract: Two new species of *Cyrtomium* from Shandong, *C. confertiserratum* and *C. reflexosquamatum* were described. The morphology and palynology showed that *Cyrtomium confertiserratum* is similar to *C. fortunei* f. *fortunei*, while it differs from the latter one mainly in: the upper pinnae rhombic, the lower part 1-2 deep pinnatifid, lobes 3-4 cm long, about 10 mm wide, lateral pinnaes densely serrate, indusia have small tooth on the edge, spores reniform with irregular tuberculate perine. *Cyrtomium reflexosquamatum* is similar to *C. shandongense* in morphology, but *C. reflexosquamatum* is larger, up to 60 cm with 15-29 pairs pinnae, densely covered with anatropous scales above the pinnae bases, and spores reniform with rugate and finely fenestrate perine.
Key words: *Cyrtomium confertiserratum*; *Cyrtomium reflexosquamatum*; *Cyrtomium*; New species

贯众属（*Cyrtomium*）是 Presl 于 1836 年建立的。据《中国植物志》（孔宪需，2001）记载，该属约40余种，主要分布于亚洲东部，以中国西南为中心。贯众属的分类学研究主要有 Christensen（1930）、秦仁昌（1936）、邢公侠（1965）、李建秀（1984）、周凤琴等（1999）、卢金梅等（2007）等，它们分别从分类、形态解剖及孢子形态方面开展的工作，均为密齿贯众和倒鳞贯众两新种的建立提供重要依据。

1　密齿贯众　新种，图1；图3：1～2

Cyrtomium confertiserratum J. X. Li, H. S. Kung et X. J. Li, sp. nov. Fig. 1; Fig. 3: 1-2

Species affinis *Cyrtomium fortunei* f. *fortunei*,

收稿日期：2011-07-30，2011-12-26 接受发表
作者简介：李建秀（1937-）男，教授，主要从事蕨类植物分类学、孢粉学和药用植物资源学的教学和科研工作。
E-mail: jianxiu_li@163.com

sed pinna terminali rhombica, basi 1–2-partita, lobus 3–4 cm long, 10 mm lat, pinnis lateralibus margine conspicue dense acute serratis, indusi rotundat, margine undulato-serrat, sporodermide tuberculata differt.

Plants ca. 50 – 60 cm high. Rhizome erect, densely scaly; scales brown, broadly ovate. Fronds caespitose, stipes 8–10 cm, base 2 mm wide, stramineous, ventral narrowly grooved, with broadly lanceolate scales, fimbriate-tooth at margin, upward scales sparse; lamina narrow-lanceolate, 40–45 × 10 –12 cm, acuminate at apex, slightly narrow at base, 1-pinnate; lateral pinnae 15 – 17 pairs, alternate, obliquely ascendant, with short stalk, falcate-lanceolate, middle pinnae 6 – 8 × 2 cm, apices gradually acuminate, base oblique, sub-rounded, upward obtuse auriculate, downward cuneate, margin with finely sharp serrate, spreading forward; veins pinnate, veinlet joined into many rows of areoles, obscure adaxially, slightly convex abaxially; upper pinnule rhombic, 6 cm long, 4 cm wide, basal 1–2 deeply lobed, segment 3 – 4 × 1 cm. Lamina hard herbaceous, glabrous adaxially, clothed with hair-like scales abaxially; rachis narrowly grooved on ventral side, clothed with brown, linear-lanceolate scales. Sori dorsal; indusia rounded, peltate, with erose margin, caducous; spores reniform, with irregular tuberculate perine.

植株高约50～60 cm。根状茎直立，密被阔卵形棕色鳞片。叶簇生，柄长8～10 cm，基部直径约2 mm，禾秆色，腹面有浅纵沟，被宽披针形鳞片，鳞片边缘有流苏状齿，向上渐稀疏；叶片狭披针形，长40～45 cm，宽10～12 cm，先端渐尖，基部略变狭，奇数一回羽状；侧生羽片15～17对，互生，斜向上，柄极短，镰刀状披针形，中部羽片长6～8 cm，宽约2 cm，先端渐尖，基部偏斜，近圆形，上侧具钝圆形耳状凸起，下侧楔形，边缘具向前伸展的明显的细密尖锯齿；具羽状脉，小脉联结成多行网眼，腹面不明显，背面微凸起；顶生羽片菱形，长6 cm，宽4 cm，下部1～2深裂，裂片长3～4 cm，宽约10 mm。叶为坚草质，腹面光滑，背面生毛状小鳞片；叶轴腹面有浅纵沟，生线状披针形棕色小鳞片。孢子囊群遍布羽片背面；囊群盖圆形，盾状，边缘有波状小齿，易早落；孢子肾形，孢壁具不规则的瘤状纹饰。

Shandong（山东）: Jinan（济南）, Taian（泰安）, Liangzhuang（良庄）in sylvis supium, 600 m, 6. 8. 1988, J. Q. Sun（孙积泉）88-131（Holotypus SDCM）.

本新种近似贯众 *Cyrtomium fortunei* J. Sm. f. *fortunei*，但顶生羽片菱形，基部1～2深裂，裂片长3～4 cm，宽约10 mm，侧生羽片边缘有细密锯齿，囊群盖边缘有波状小齿，孢壁具不规则的瘤状纹饰，易于区别。

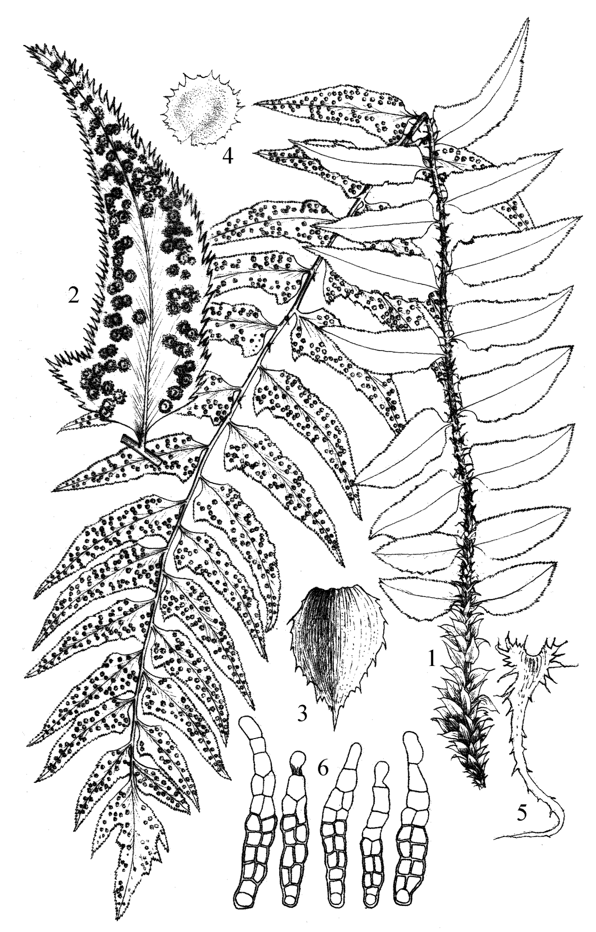


图1 密齿贯众 1. 叶片；2. 羽片；3. 叶柄基部大鳞片；4. 囊群盖；5. 叶轴中部小鳞片；6. 羽片背面节状毛（李建秀等依据孙积泉88-131号标本绘制）

Fig. 1 *Cyrtomium confertiserratum* 1. Frond; 2. Pinna; 3. Scale at the base of the stipe; 4. Indusium; 5. Scale in the middle of the rachis; 6. Multicellular cell on the underside of the lamina. (Drawn by J. X. Li *et al.* from the holotype, J. Q. Sun 88–131 (SDCM)).

2 倒鳞贯众 新种，图 2；图 3：5 ~ 6

Cyrtomium reflexosquamatum J. X. Li et F. Q. Zhou, sp. nov. Fig. 2; Fig. 3: 5–6

Species affinis *Cyrtomium shandongense*, sed magnitudine majore, pinnis pluribus ad 15 – 29-jugas, apice caudato-acuminatis, rhache supra basin paleis linearibus, brunneis necnon valde retrorsis dense vestita, episporio processibus auriculatis et anastomosantis praedita differt.

Plants ca. 40 – 60 cm high. Rhizome erect, densely scaly; scales brown, oblong-ovate. Fronds caespitose, stipes 8–10 cm, base ca. 2 mm wide, stramineous, ventral narrowly grooved, with densely oblong lanceolate scales at the base, fimbriate-tooth at margin; lamina linear-lanceolate, 30 – 50 × 6 – 8 cm, acuminate at the apex, slightly narrower at the base, 1-pinnate; lateral pinnae 15–29 pairs, alternate, horizontally spreading, with very short stalk, falcate-lanceolate, middle pinnae 4.5–5.5 × 1 cm, apices gradually caudate acuminate, base oblique or round-cuneate, upside obtuse or triangular auriculate, downside cuneate, margin with irregular sparse serrate; veins pinnate, veinlet joined into 2 rows areoles, obscure adaxially, slightly convex abaxially; terminate pinnae narrow-ovate, basal 1–2 deeply lobed, segment 3–4 × 2–2.5 cm. Lamina herbaceous, glabrous adaxially, green, densely hairlike scales abaxially, grey-green; ventral side of rachis narrowly grooved, densely clothed with anatropous, brown, linear-lanceolate scales on upper basal part. Sori in 1–2 rows on each side of costa near to margin; indusia rounded, peltate, margin undulatly serrulate. Spores reniform, with ear flake and fine reticulate perine.

植株高 40 ~ 60 cm。根状茎直立，密被长卵状深棕色鳞片。叶簇生，叶柄长 8 ~ 10 cm，基部直径约 2 mm，禾秆色，腹面有浅纵沟，基部密生长卵形或披针形棕色鳞片，鳞片边缘有流苏状齿；叶片线状披针形，长 30 ~ 50 cm，宽 6 ~ 8 cm，先端渐尖，基部略变狭，奇数一回羽状；侧生羽片 15 ~ 29 对，互生，近平展，柄极短，镰刀状披针形，中部羽片长 4.5 ~ 5.5 cm，宽约 10 mm，先端尾状长渐尖，基部偏斜或圆楔形，上侧有钝圆形耳状凸起或三角形耳状凸起，下侧楔形，边缘有不规则的疏锯齿；具羽状脉，小脉联结成 2 行网眼，腹面不明显，背面微凸；顶生羽状狭卵形，基部有 1 ~ 2 浅裂片，长 3 ~ 4 cm，宽 2 ~ 2.5 cm。叶为草质，腹面光滑，绿色，背面灰绿色有较密的毛状小鳞片；叶轴腹面有浅纵沟，基部以上密被倒生（指向下方向的）线状披针形棕色小鳞片。孢子囊群在中脉两侧近叶缘处各排成 1 ~ 2 行；囊群盖圆形，盾状，边缘有波状齿；孢子肾形，孢壁具耳片状及细网结状纹饰。

Shandong（山东）: Jinan（济南）, Xiying（西营）in sylvis supium, 500 m, 5.5.2005, J. X. Li（李建秀）2005-01（Holotypus PE）.

本新种近似山东贯众（*Cyrtomium shandongense* J. X. Li），但形体较大，高达 60 cm，羽片较多，达 15 ~ 29 对，叶轴基部以上密被线形，褐色倒生鳞片，孢壁为耳片状及网结状纹饰，易于区别。

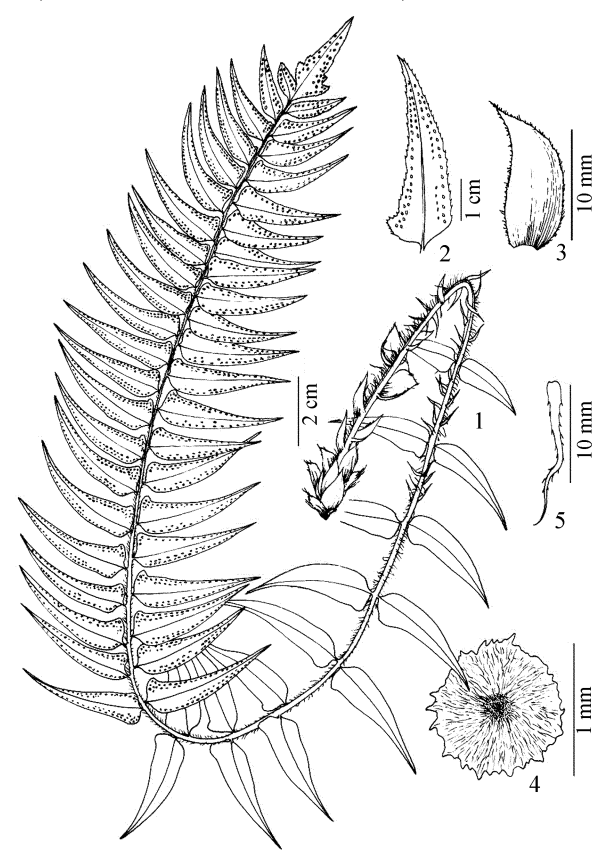


图 2 倒鳞贯众 1. 叶片；2. 羽片；3. 叶柄基部大鳞片；4. 囊群盖；5. 叶轴中部小鳞片

Fig. 2 *Cyrtomium reflexosquamatum* 1. Frond; 2. Pinna; 3. Scale at the base of the stipe; 4. Indusium; 5. Scale in the middle of the rachis

扫描电镜下孢子形态的观察

作者采用日本产 JEOL Superprobe 733 型扫描电子显微镜对两新种和近缘的两种贯众属植物的成熟孢子形态进行了观察（表1，图3）。

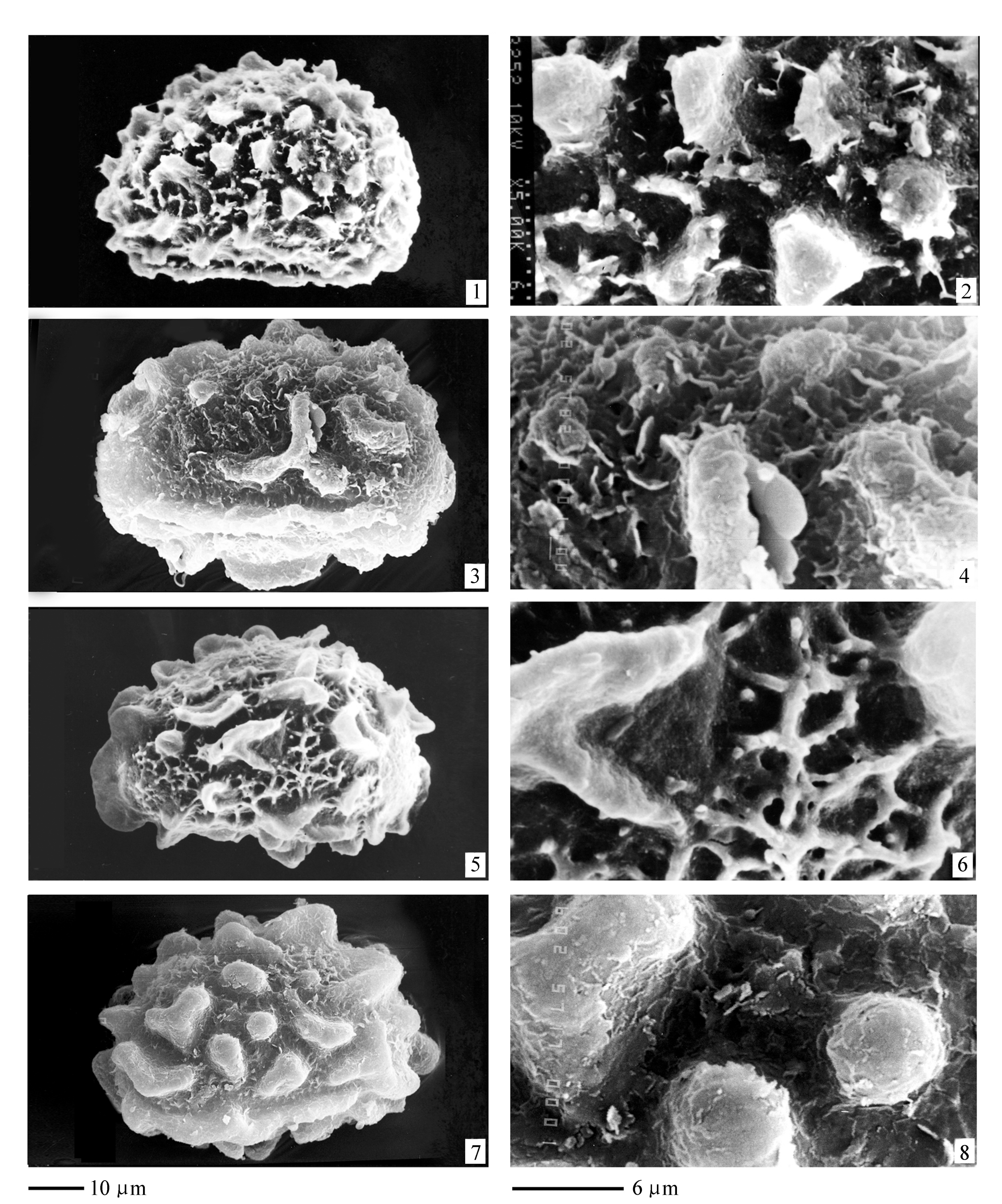


图3　贯众属四种植物孢子形态特征　1～2：密齿贯众；3～4：贯众（原变型）；5～6：倒鳞贯众；7～8：山东贯众；1，3，5，7：孢子赤道面观；2，4，6，8：孢子赤道面局部放大

Fig. 3　Spore morphology of four *Cyrtomium* species　1-2：*C. confertiserratum*；3-4：*C. fortunei* f. *fortunei*；5-6：*C. reflexosquamatum*；7-8：*C. shandongense*；1，3，5，7：Equatorial view；2，4，6，8：Equatorial local view

表 1　贯众属四种植物孢子形态特征

Table 1　Spore morphology of four *Cyrtomium* species

Taxon	Size/μm	Ornamentation under SEM	Voucher specimen	Fig. 3
密齿贯众 *Cyrtomium confertiserratum* J. X. Li, H. S. Kung et X. J. Li	36.2 × 51.6	具不规则的瘤块状突起，其间具不规则粗条脊和颗粒状纹饰。Thick stripped ridges and granule decoration among the irregular tuberculate protuberance	J. Q. Sun（孙积泉）88-131, Taian（泰安）, Liangzhuang（良庄）	1 ~ 2
贯众 *Cyrtomium fortunei* J. Sm. f. *fortunei*	38.6 × 52.6	具稀疏不规则的短条脊状和疣块状突起，其表面具细密的片状纹饰。Thin flake decoration on the surface of sparse, irregular, short, cristate and verrucate protuberance	Hou A. X.（侯爱霞）96001, Taian（泰安）, Dawenkou（大汶口）	3 ~ 4
倒鳞贯众 *Cyrtomium reflexosquamatum* J. X. Li et F. Q. Zhou	41.4 × 56.1	具耳片状突起，其间具网结状及颗粒状纹饰。Reticulate and granule decoration among the auricular protuberance	J. X. Li et F. Q. Zhou（李建秀、周凤琴）960521 960522 Jinan（济南）, Xiying（西营）	5 ~ 6
山东贯众 *Cyrtomium shandongense* J. X. Li	42.1 × 60.4	具不规则短条脊和疣状突起，其表面具片状纹饰。Flake decoration on the surface of irregular, short, cristate and verrucate protuberance	J. X. Li（李建秀）02023-1, Shandong（山东）, Tashan（塔山）	7 ~ 8

致谢　本文蒙中国科学院昆明植物研究所卢金梅博士、张书东博士，中国科学院植物研究所张宪春研究员、贵州科学院生物研究所王培善研究员审阅并提出宝贵意见。

〔参　考　文　献〕

孔宪需，2001. 中国植物志第 5 卷第 2 分册［M］. 北京：科学出版社，184—216

Ching RC（秦仁昌），1936. On the genus *Cyrtomium* presl［J］. *Bulletin of the Chinese Botanical Society*, **2**（2）：85—106

Christensen C, 1930. The genus *Cyrtomium*［J］. *American Fern Journal*, **20**：41—52

Lu JM（卢金梅），Li DZ（李德铢），Wu D（吴丁），2007. Spore morphology of the family *Dryopteridaceae*［J］. *Acta Botanica Yunnanica*（云南植物研究），**29**（4）：397—408

Li JX（李建秀），1984. New ferns from Shandong province［J］. *Bulletin of Botanical Research*（植物研究），**4**（2）：142—146

Presl C, 1836. *Tentamen. Pteridographiae, seu Genera Filicacearum Praesertim Juxta Venarum Decursum et Distributionem Exposita*［M］. Prague：Filiorum Theophili Haase

Shing KH（邢公侠），1965. A taxonomical study of the genus *Cyrtomium* presl［J］. *Acta Phytotax Sin*（植物分类学报），**Additamentum I**：1—48

Zhou FQ（周凤琴），Zhang SY（张胜艳），Li JX（李建秀）*et al.*, 1999. Studies on the morphology and anatomy of *Cyrtomium* from Shandong province［J］. *Ching Memorial Volume*（纪念秦仁昌论文集），370—379